

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-23 are pending in the application, with claims 1 and 14 being the independent claims. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 102

Claims 1 and 14 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,712,995 to Cohn, (hereinafter "Cohn"). (Office Action at § 3.) Applicant respectfully traverses these rejections.

Cohn "relates to display systems, including computer displays, with multiple application windows or panes." (Cohn at col. 1, lines 7-9.) For example, Cohn might be used to divide a graphics display screen into windows where one window displays the results of a word processing application, another window displays the results of a spreadsheet application, still another window displays the results of a presentation application, etc. Furthermore, in Cohn, "The computer hardware 100 includes a central processing unit (CPU) 110 for executing program instructions. The program instructions may include one or more application programs[.]" (Cohn at col. 10, lines 21-24.)

In contrast, the present invention is for use in an environment where "computer graphics processes have been decomposed into standard functions performed in sequential stages of a graphics 'pipeline'." (Specification at pg. 7, lines 22-23.) Whereas Cohn uses the central processing unit to manage the display of results of *multiple applications*, the present invention uses *multiple graphics pipelines*, dedicated to performing graphics functions, to display the results of an application.

Applicant has amended claims 1 and 14 to draw attention to this distinctive feature more precisely. Claim 1, as amended, recites "assigning each tile of the tiles to a corresponding digital video display unit of a corresponding *graphics pipeline*". Likewise, claim 14, as amended, recites "a tile assigner to assign each tile of the tiles to a corresponding digital video display unit of a corresponding *graphics pipeline*".

Thus, Cohn does not recite each and every feature of independent claims 1 or 14, and therefore does not anticipate these claims. Accordingly, Applicant respectfully requests that the rejection under 35 U.S.C. § 102(b) be reconsidered and withdrawn for claims 1 and 14, and that these claims be passed to allowance.

Rejections under 35 U.S.C. § 103

Claims 2-4, 8-13, and 15-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Cohn in view of U.S. Patent No. 6,515,673 to Hashimoto *et al.*, (hereinafter "Hashimoto"). (Office Action at § 4.) Applicant respectfully traverses these rejections.

Claims 2-4 and 8-13 depend from independent claim 1 and are allowable for at least the reasons described above with respect to independent claim 1. Likewise, claims 15-23 depend from independent claim 14 and are allowable for at least the reasons described above with respect to independent claim 14. Furthermore, as with Cohn, Hashimoto neither teaches nor suggests the multiple graphics pipelines of the present invention.

Hashimoto "relates to using texture mapping to create environmental projections for immersive video applications." (Hashimoto at col. 1, lines 53-55.) Hashimoto teaches a single graphics pipeline in which "a texture projection is formed by dividing the inner surfaces of the solid into polygonal facets. . . . The process of recursively dividing polygonal curved surfaces into more polygonal curved surfaces continues until a desired number of facets is reached." (Hashimoto at col. 6, lines 35-36; and at col. 7, lines 14-17.) Assorted variations of this process are graphically displayed at FIGs. 5 through 8 of Hashimoto. Thus, Hashimoto pertains to the decomposition of an original three-dimensional image into component polygons. The Hashimoto process does not pertain to the rendering of that image. The Examiner has misconstrued the polygon *primitives* of FIGs. 5 through 8 of Hashimoto as the *tiles* of the present invention.

Hashimoto does not teach tiles because Hashimoto only teaches a single graphics pipeline (i.e, environmental display system 930). "[E]nvironmental display system 930 includes a data storage unit 935, a texture projection generation unit 932, an optional triangularization unit 938, a texture rendering unit 937, display 955, a user input device 952, and a view window determination unit 953." (Hashimoto at col. 11, lines 41-45.)

Because Hashimoto only teaches a single graphics pipeline, it would have no need to teach, and indeed does not teach, counting digital video display units.

The Examiner infers that the view window determination unit of Hashimoto creates multiple environment maps [tiles]. (See, Office Action at § 4.) However, Hashimoto actually teaches that: "View window determination unit 953 provides a view window 955 which indicates the area that is visible to viewer 105 (FIG. 1)." (Hashimoto at col. 11, lines 53-55.) This corresponds to the display area as it is defined in the present invention: "The portion of the frame buffer presented for viewing is designated as the 'display area'." (Specification at pg. 8, lines 23-24.)

Because neither Cohn nor Hashimoto teaches or suggests the multiple graphics pipelines of the present invention, it would not have been obvious to one skilled in the art to incorporate the teachings of Hashimoto into the teachings of Cohn in order to provide the proper number of windows or tiles for optimizing the system performance in the manner of the present invention. Therefore, Applicant requests that the rejections under 35 U.S.C. § 103(a) be removed and that claims 2-4 and 8-13 be passed to allowance.

Claims 5-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Cohn in view of Hashimoto and further in view of U.S. Patent No. 6,223,183 to Smith *et al.*, (hereinafter "Smith"). (Office Action at § 4.) Applicant respectfully traverses these rejections.

Claims 5-7 depend from independent claim 1 and are allowable for at least the reasons described above with respect to independent claim 1. Furthermore, as with Cohn

and Hashimoto, Smith neither teaches nor suggests the multiple graphics pipelines of the present invention.

Smith "relates generally to a method for *describing and indexing* views of multi-dimensional lattice data such as images, video and audio in space, time, frequency and resolution". (Smith at col. 1, lines 18-21 (emphasis added).) Such a method is used in "[m]ultimedia search, retrieval, and filtering applications". (Smith at col 1, line 40.)

The Examiner calls attention to the following passage in Smith: "For data which comprise a collection of views, as determined at 1135, or which include decompositions of the data in space and frequency, as determined at 1136, it is necessary to specify sets of views in order to described the complex objects or the decompositions of the data in space and frequency." (Smith at col. 8, lines 60-65.) (Office Action at § 4.)

However, the Examiner has erroneously equated the *set of views* of Smith with the *tiles* of the present invention. Even if such an equivalence could be established, nothing in Smith establishes a relationship between the *area* of the tile and the complexity of the object as is done in claim 5 of the present application. Claim 5 recites "wherein an *area* of each of the tiles is a function of a complexity of the image output of said assigned corresponding digital video display unit."

Because none of Cohn, Hashimoto, or Smith teaches or suggests the multiple graphics pipelines of the present invention, it would not have been obvious to one skilled in the art to incorporate the teachings of Smith into the teachings of Cohn and Hashimoto in order to improve readability (or resolution) of complex images in the manner of the present invention. Therefore, Applicant requests that the rejections under 35 U.S.C. § 103(a) be removed and that claims 5-7 be passed to allowance.


Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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Version with markings to show changes made

In the Claims:

Kindly amend the claims as follows:

1. (Once Amended) A method for spatially compositing digital video images with a tile pattern library, comprising the steps of:

- (b) choosing a tile pattern from the tile pattern library;
- (c) creating a compositing window within a display area of a compositor, wherein a shape of said created compositing window matches a shape of a periphery of said chosen tile pattern and wherein said created compositing window is formed by pixels within the display area;
- (d) decomposing said created compositing window into a number of tiles, wherein the number of tiles equals the amount of tiles in said chosen tile pattern, wherein a shape and a position of each of the tiles matches a shape and a position of a corresponding tile in said chosen tile pattern, and wherein each of the tiles is formed by pixels within the display area;
- (e) assigning each tile of the tiles to a corresponding digital video display unit of a corresponding graphics pipeline; and
- (f) receiving, at each tile of the tiles, an image output of said assigned corresponding digital video display unit, thereby spatially compositing digital video images with a tile pattern library.

14. (Once Amended) A system for spatially compositing digital video images with a tile pattern library, comprising:

- (a) a tile pattern chooser to choose a tile pattern from the tile pattern library;
- (b) a compositing window creator to create a compositing window to reside within a display area of the compositor, wherein a shape of the compositing window created by said compositing window creator matches a shape of a periphery of the tile pattern chosen by said tile pattern chooser and wherein the compositing window created by said compositing window creator is formed by pixels within the display area;
- (c) a decomposer to decompose the compositing window created by said compositing window creator into a number of tiles, wherein the number of tiles equals the amount of tiles in the tile pattern chosen by said tile chooser, wherein a shape and a position of each of the tiles matches a shape and a position of a corresponding tile in said chosen tile pattern, and wherein each of the tiles is formed by pixels within the display area;
- (d) a tile assigner to assign each tile of the tiles to a corresponding digital video display unit of a corresponding graphics pipeline; and
- (e) an image transmitter to transmit, to each tile of the tiles within the display area of the compositor, an image output of the corresponding digital video display unit assigned by said tile assigner, thereby spatially compositing digital video images with a tile pattern library.